

What is claimed is:

1. A ferroelectric random access memory (FeRAM) device,
comprising: *Fig 2 or 5*

5 a plurality of memory cells arranged in an $M \times J$ matrix, wherein
 M is a positive integer more than three and J is a positive integer;
a number of reference cells connected to each column of the
memory cells; and *Fig 1*

10 a cell selection means for selecting a memory cell in response
to address signals from an external circuit and selecting a
reference cell corresponding to the selected memory cell.

Col 1 lin 5 col 2 l. 10, cl 3 l 36-54

15 2. The FeRAM device as recited in claim 1, wherein the number
of memory cells of each column is $M = 2^N$ and the number of reference
cells is N .

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3. The FeRAM device as recited in claim 1, wherein said cell
selection means includes:

20 a memory cell selection circuit connected to the memory cells
via word lines for generating a memory cell selection signal in
response to the address signals to select a corresponding memory
cell; and

25 a reference cell selection circuit connected to the reference
cells via reference word lines for generating a reference cell
selection signal to select the corresponding reference cell.

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4. The FeRAM device as recited in claim *2* 3, wherein said memory

cell selection circuit includes:

a plurality of NAND gates, each NAND gate for receiving address signals from an external circuit to perform NAND logical operation; and

5 a plurality of inverters, each inverter for inverting an output signal of each NAND gate to generate the memory cell selection signal.

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3. The FeRAM device as recited in claim 2, wherein said
10 reference cell selection circuit includes:

a plurality of NAND gates, each NAND gate for receiving address signals from an external circuit to perform NAND logical operation; and

a plurality of inverters, each inverter for inverting an
15 output signal of each NAND gate to generate the reference cell selection signal.

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6. The FeRAM device as recited in claim 1, wherein the number
of the memory cells is 2^8 and the number of the reference cells
20 is eight.

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7. The FeRAM device as recited in claim 3, wherein each NAND
gate of said memory cell selection circuit has eight input
terminals.

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8. The FeRAM device as recited in claim 4, wherein each NAND
25 gate of said reference cell selection circuit has three input

terminals.

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9. The FeRAM device as recited in claim 1, wherein said memory
cells have one transistor and one ferroelectric capacitor,
5 respectively.

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10. The FeRAM device as recited in claim 1, wherein said
reference cells have one transistor and one ferroelectric
capacitor, respectively.

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11. The FeRAM device as recited in claim 1, wherein said memory
cells are connected to first bit line.

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12. The FeRAM device as recited in claim 11, wherein said
15 reference cells are connected to second bit line.

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13. The FeRAM device as recited in claim 12, wherein said
memory cells and said reference cells shares a cell plate, wherein
the cell plate is positioned between the first bit line and the
20 second bit line.